

What is claimed is:

1. A galvanometer comprising:  
a rotor comprising a cylindrical magnet having a first opening extending inwardly from a first end of said magnet;  
a shaft at least partially received in said opening, said shaft extending from said magnet.
2. A galvanometer according to claim 1 further comprising a bearing said bearing carried on said shaft.
3. A galvanometer according to claim 1 wherein said shaft comprises an output shaft of said galvanometer.
4. A galvanometer according to claim 1 wherein said shaft comprises a tail shaft.
5. A galvanometer according to claim 1 said magnet comprising a second opening extending inward from a second end of said magnet, and a second shaft at least partially received in said second opening and extending from said magnet.
6. A galvanometer according to claim 1 wherein said shaft comprises a ceramic material.

7. A galvanometer according to claim 1 wherein said shaft comprises a metallic material.
8. A galvanometer according to claim 1 wherein said shaft comprises a composite material.
9. A galvanometer according to claim 1 wherein said shaft is bonded in said opening.
10. A galvanometer comprising:  
a rotor comprising a tail shaft, said tail shaft comprising a tail cap, said tail cap comprising a slot extending into an end of said tail cap;  
a longitudinal member extending through said slot.
11. A galvanometer according to claim 10 wherein said tail cap comprises a member coupled to said tail shaft.
12. A galvanometer according to claim 10 wherein a first end of said longitudinal member is movable transverse to a longitudinal axis of said rotor.
13. A galvanometer according to claim 12 comprising a threaded member bearing on said first end of said longitudinal member, said longitudinal member being adjustable by translating said screw.

14. A galvanometer according to claim 10 wherein a second end of said longitudinal member is fixed.

15. A galvanometer according to claim 14 wherein said second end of said longitudinal member is disposed in a hole.

16. A galvanometer according to claim 14 wherein said second end of said longitudinal member is fixed by a screw.

17. A galvanometer according to claim 12 wherein a second end of said longitudinal member is movable transverse to a longitudinal axis of said rotor.

18. A galvanometer according to claim 10 wherein said longitudinal member comprises a wire.

19. A galvanometer comprising:  
a rotor comprising a tail shaft;  
a bearing received on at least a portion of said tail shaft; and  
a diaphragm spring engaged with said bearing, said diaphragm spring providing a predetermined axial force on said bearing.

20. A galvanometer according to claim 19 wherein said diaphragm spring comprises a member wherein a portion of said member is resiliently displaceable in a direction generally normal to said member.

21. A galvanometer according to claim 20 wherein said diaphragm spring comprises a planar member wherein a portion of said planar member is resiliently displaceable generally normal to said planar member.

22. A galvanometer according to claim 20 wherein said diaphragm spring comprises generally a circular disc wherein a center portion of said disc is resiliently normal to said disc.

23. A galvanometer according to claim 22 wherein said diaphragm spring comprise a cutout defining a generally spiral slot in said disc.

24. A galvanometer according to claim 22 wherein said diaphragm spring comprises a plurality of cutouts each defining a stepped spiral slot in said disc.

25. A galvanometer according to claim 19 wherein said diaphragm spring comprises a feature engageable with said bearing.

26. A galvanometer according to claim 25 wherein said diaphragm spring comprises a plurality of upstanding tabs engageable with said bearing.

27. A scanning system comprising:

a galvanometer comprising a rotor comprising a cylindrical magnet including a first opening in a first end thereof, and a shaft at least partially received in said first opening and extending from said magnet; and

an optical element coupled to said rotor, said optical element rotatably positionable by movement of said rotor.

28. A scanning system according to claim 27 wherein said optical element is directly coupled to said rotor by an output shaft.

29. A scanning system according to claim 27 wherein said shaft comprises an output shaft and said optical element is coupled to said output shaft.

30. A scanning system according to claim 27 said rotor including a second opening in a second end thereof and a second shaft at least partially received in said second opening and extending from said magnet.

31. A scanning system comprising:

a galvanometer comprising a rotor having a tail shaft comprising a tail cap having a slot therein, and a longitudinal member extending through said slot; and  
an optical element coupled to said rotor, a rotational range of motion of said optical element controlled by said longitudinal member extending through said slot.

32. A scanning system according to claim 31 wherein said tail cap comprises a member coupled to said tail shaft.

33. A scanning system according to claim 31 wherein a first end of said longitudinal member is movable transverse to a longitudinal axis of said rotor.

34. A scanning system according to claim 33, wherein said range of motion of said optical element is varied by moving said first end of said longitudinal member.

35. A scanning system according to claim 31 wherein said optical element is directly coupled to said rotor.

36. A scanning system comprising:  
a galvanometer comprising a rotor having a tail shaft with a bearing received on said tail shaft, and a diaphragm spring engaged with said bearing, said diaphragm spring providing a predetermined axial force on said bearing; and  
an optical element coupled to said rotor.

37. A scanning system according to claim 36 wherein said diaphragm spring comprises a member wherein a portion of said member is resiliently displaceable in a direction generally normal to said member.

38. A scanning system according to claim 36 wherein said optical element is directly coupled to said rotor.

39. A scanning system according to claim 36 wherein said diaphragm spring comprises a disc having at least one spiral cutout.

40. A scanning system according to claim 36 wherein said spiral cutout comprises a stepped-spiral cutout.